

(0007) Claims

- 5 1. A system for conditioning inlet fluid including;
a fluid inlet,
a first fan for drawing fluid into the inlet;
a first filter for removing particulate matter from the inlet fluid and for splitting the flow
of fluid into a first portion of fluid and a second portion of fluid;
10 a second fan drawing said first portion of fluid through a carbon monoxide filter;
said second fan pushing said first portion of fluid through a first passage, said first
passage cooled by a thermal electric cooler;
said second portion of fluid flowing through a second passage of said thermal electric
cooler where it is heated by waste heat from the thermal electric cooler and said first
15 portion of fluid flowing from an outlet.
2. The system of claim 1 including a helmet receiving fluid flowing from said outlet.
3. The system of claim 1 wherein said carbon monoxide filter includes a removable
20 cartridge.
4. The system of claim 3 wherein the removable cartridge contains pellets of
alumina impregnated with heavy metals.
5. The system of claim 3 wherein said carbon monoxide filter is a catalytic filter.

6. The system of claim 1 wherein the fluid is air.

7. The system of claim 1 wherein a portable box contains at least said first fan, said first filter, said carbon monoxide filter and said thermal electric cooler.

8. A system for conditioning an air flow including;

5 an air inlet providing an inlet air flow,

a first filter for removing particulate matter from the inlet air flow and for splitting the inlet air flow into a first portion of air and a second portion of air;

a carbon monoxide filter;

a first passage, said first passage cooled by a thermal electric cooler;

10 a second passage of said thermal electric cooler where said second passage is heated by waste heat from the thermal electric cooler and said first portion of air flowing through said carbon monoxide filter and then through said first passage to provide cooled filtered air to an outlet.

9. The system of claim 8 wherein the system includes a portable box containing at
15 least the first filter, the carbon monoxide filter and the thermal electric cooler.

10 The system of claim 9 wherein the box includes a lid, said lid providing access to said carbon monoxide filter.

11. The system of claim 10 wherein the carbon monoxide filter includes a removable cartridge containing pellets of catalytic material.

20 12. The system of claim 8 wherein the inlet includes a fan powering the flow of inlet air.

13. The system of claim 8 wherein the thermal electric cooler includes at least two thermal electric units oriented with a cooling side facing each other to create said first passage.

14. The system of claim 13 wherein more than one cooling passage is formed.

5 15. A method for conditioning an air flow including;

providing an inlet air flow,

filtering particulate matter from said inlet air flow,

splitting the inlet air flow into a first portion of air and a second portion of air;

catalytically filtering carbon monoxide from said first portion of air;

10 cooling said first portion of air with a thermal electric cooler to provide cooled, filtered air to an outlet.

16. The method of claim 15 wherein the thermal electric cooler includes a plurality of thermal electric units and wherein the step of cooling includes flowing said first portion of air through a passage formed between cold faces of two thermal electric units.

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